



Emerging technology, similar risks



A survey of financial services executives shows that artificial intelligence, robotics, and blockchain are rapidly gaining traction within the financial services industry. However, familiarity and deployment of these disruptive technologies may vary, and firms continue to evaluate a range of risks involved in adopting them, including risks that are no different for any new technology.



Methodology

In Q1 2018, Deloitte sponsored a survey of approximately 300 executives in the banking, capital markets, wealth management, and insurance sectors of the financial services industry to understand potential trends in the perception, adoption, and maturity of emerging artificial intelligence, robotics, and blockchain technologies. The survey was conducted by SourceMedia Research, an affiliate of *American Banker*.

Survey respondents reported that they have influence over technology purchase decisions and were drawn from the opt-in subscriber base of American Banker. Respondents were asked 40 questions covering information about themselves, the companies they represent, the innovative technologies used at their companies, and their perception of how the use of these technologies will likely evolve. About 60 percent of the questions were multiple-choice and the remaining questions were open-ended textual responses. Observations and analysis provided in this POV were informed by the survey responses and supported by Deloitte's marketplace experience and perspective. Individual responses were not validated or confirmed by Deloitte.

Definitions used in the survey

- **Blockchain** – Distributed database technology that enables peer-to-peer transfers of value (assets, records, and identity information, for example) in nearly real time and can eliminate the need for an intermediary. This technology uses cryptography and a formidable protocol for recording transactions to achieve a level of security that establishes trust among participants.
- **Artificial intelligence (AI)** - Applications that are able to mimic human capacities, such as visual perception, speech recognition, and decision-making, and can improve predictability and operation based on data received over time.
- **Robotic process automation (RPA)** - Rules-based systems that mimic human behavior to automate parts of repeatable processes.

Survey responses show that artificial intelligence (AI), robotics, and blockchain are rapidly gaining acceptance and adoption in the industry, thus changing the way business can and will likely be conducted in the future. However, familiarity with these disruptive technologies varies, and firms continue to evaluate an array of performance and operational risks and unknowns when adopting them.

While surveyed executives indicate they are enthusiastic about AI, robotics, and blockchain, many express some wariness over risks inherent in new technology. Some of the important risk considerations include:



Operational: How does the new technology fit into existing systems? Poorly designed automation can increase processing errors. Additionally, in the instance of blockchain's distributed ledger technology which could be used to replace pieces of core infrastructure, it must work seamlessly with legacy infrastructure.



Strategic: Do the potential advantages of the new technology justify its cost? A key decision is whether firms want to be early adopters or wait for the technology to mature.



Security: What are the technology's vulnerabilities and weaknesses? For example, self-executing "smart contracts" in the blockchain framework rely on outside data feeds that could be targeted for malicious attacks.



Regulatory: Can new automation generate unwanted regulatory concerns or issues? For instance, firms need to clearly understand and document how RPA or AI technologies work so they can know and explain end-to-end processes and controls to their stakeholders including regulators. This importance was highlighted in feedback from the 2018 Comprehensive Capital Analysis Review (CCAR) cycle, identifying areas of needed enhancement such as loss forecasting, data quality, model risk management, and internal audit. More firms are taking a disciplined approach to business process improvement and assessing use of automation and robotics to improve controls, reduce manual reconciliation, and control processes at lower costs, but all technologies when deployed for purposes of regulatory compliance need to confirm that compliance requirements are captured and addressed successfully.

Specifically, RPA and AI can enhance the existing infrastructure and landscape used by the financial services industry to increase efficiency. By contrast, blockchain is more of a foundational technology that could serve as an alternative to the core technology platforms of the industry.

More generally, some executives worry that there is a chasm between perceptions about the capabilities of new technologies and the reality of what they can accomplish. "Define needs first, then seek the technology to solve them," one respondent suggests.

Survey respondents anticipate that all three technologies will likely become more important in the future and many are already considering implementing the technologies in their organizations. Forty-seven percent of respondents say it will be extremely important or critical for their firms to have implemented AI in five years,¹ while 45 percent of respondents with some knowledge of robotics say their firms are considering new applications for the technology. When asked about blockchain, 43 percent say their institutions are working on or have already launched pilot programs or commercial applications.

While most of the respondents say their firms are at least considering each of the three technologies, the race to adopt new technologies poses a level of risk as mentioned above. Interestingly, navigating these risks is not any different than those for technologies that came before them. Leading firms should consider the nuance of the technology, the speed of deployment needed to remain competitive, compliance with regulatory requirements, and cost – both in implementation and potential savings. The power of new, disruptive technologies to deliver better products and improvements in efficiency and security has only begun to be tested in an operating environment. In short, firms are caught between a steep learning curve and the imperative to keep up with innovation.

Artificial intelligence

Financial services companies are using AI in a wide range of settings, from customer service chatbots to automating loan and insurance underwriting. Survey respondents suggest the technology is gaining broad acceptance across the industry and that there are frequent initiatives to develop and implement applications.

Among the three emerging technology categories that are the focus of this survey, financial services executives express the greatest familiarity with AI, with 41 percent of respondents saying they are “extremely” or “very” knowledgeable about AI (see figure 1).² Further, about 53 percent of respondents who are familiar with artificial intelligence say their institutions are developing or have already launched commercial deployments or pilots of AI applications.

Despite the breadth of engagement with AI that the survey indicates, survey responses also suggest that spending on AI technology is heavily concentrated among a smaller group of companies willing to make large investments. Respondents were asked to provide estimates of annual AI technology spending within their functions at their firms, and figures in the top tenth of the distribution accounted for about 93 percent of the total AI spend reported.

When asked whether financial institutions are building or buying AI, the survey suggests the majority are relying on outside companies for their AI initiatives.

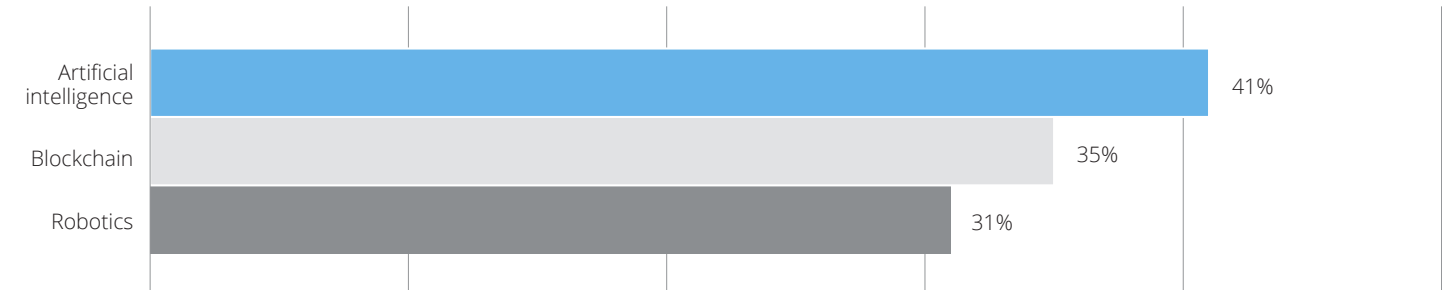
About 51 percent of respondents at firms implementing, piloting, or considering the technology say they are partnering with vendors, compared with 35 percent who are building custom, proprietary solutions.

Surveyed executives at firms that have implemented it say they have had success using AI to reduce back-office staff and analyze and make use of big data. One respondent claims that using AI helped detect fraud and produced savings of \$100 million.

The survey results indicate that the financial services industry sees enhanced security, improved productivity, and reduced operating costs as the most compelling potential benefits of AI.

However, AI is an emerging technology that carries risks, and a number of respondents expressed reservations that are keeping them from moving forward with the technology. Poorly designed decision-making systems can generate errors and raise potential regulatory problems. Some survey participants are wary about the technology's cost and its potential to misfire. Others report that their firms have decided to stay on the sidelines until the field matures. As one respondent commented, “There are too many unknowns.”

Figure 1: Percentage of respondents that say they are “extremely” or “very” knowledgeable about the these three emerging technologies



Robotics

Robotics seems to mean different things to different survey participants, and overall, fewer respondents, 31 percent, report being “very” or “extremely” knowledgeable about robotics than AI or blockchain.

Robotics encompasses a broad spectrum of technology ranging from physical devices such as the customer service robots that some banks are experimenting with in retail settings, to software robots that take the controls of business applications as a part of the growing field of RPA.

RPA is a powerful tool that automates repetitive tasks and frees staff to focus on higher-value activities. For example, many insurers are using RPA to gather and compare data and reduce the cost of processing claims, with one respondent reporting that such efforts have produced savings of \$30 million to \$40 million.

The survey shows robotics technology is making deep inroads into the financial services industry. Among respondents who say they are “very” or “extremely” knowledgeable about robotics, 39 percent report that their institutions have initiated proof-of-concept programs or commercial implementations (see figure 2).³

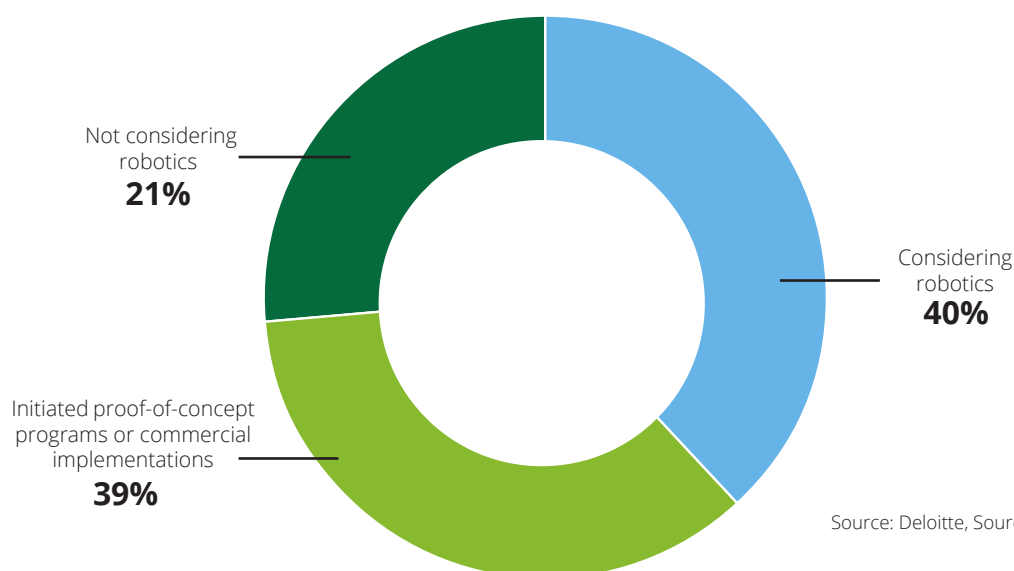
Another 40 percent of the respondents report that their institutions are considering robotics. Further, “very” or “extremely” knowledgeable respondents who say that implementing robotics will be extremely important or critical at their institutions grows from 19% percent, when considering the next 12 months, to 39 percent when considering a 5-year horizon.

Implementing robotics involves a range of risks similar to AI, which includes poorly designed automation, that can increase processing errors. Further, displacing human workers can impact morale, and create gaps in roles and accountability as organizations transition to automated systems.

Respondents at institutions holding off on robotics programs for now cite a range of barriers, including cost and a failure to establish a strong case for how the technology can help. “Don’t see a specific need right now,” one respondent says. “Watching the evolution of technology.”

However, as with the other technologies, respondents forecast increasing importance for robotics and a range of benefits.

Figure 2: Robotics adoption by financial institutions



Source: Deloitte, SourceMedia Research/American Banker

Blockchain

Blockchain is at the forefront of emerging technologies that financial institutions believe could profoundly impact the way business is done. Many financial institutions are using blockchain to build a variety of platforms – payments and trade finance are two examples – and are beginning to engage with established cryptocurrencies.

Many survey respondents think that blockchain solutions will become deeply embedded across the industry quickly. About 40 percent say implementing the technology at their institutions will be extremely important or critical in 5 years, compared with 13 percent who say the same when considering the next 12 months (see figure 3). Among surveyed bank executives, conviction about the potential for blockchain is particularly strong.

Financial services providers already report taking concrete steps to get ahead of the curve. Nearly a fifth of respondents who report familiarity with blockchain inform us that their institutions have or are working on rollouts of commercial implementations involving the technology (see figure 4).

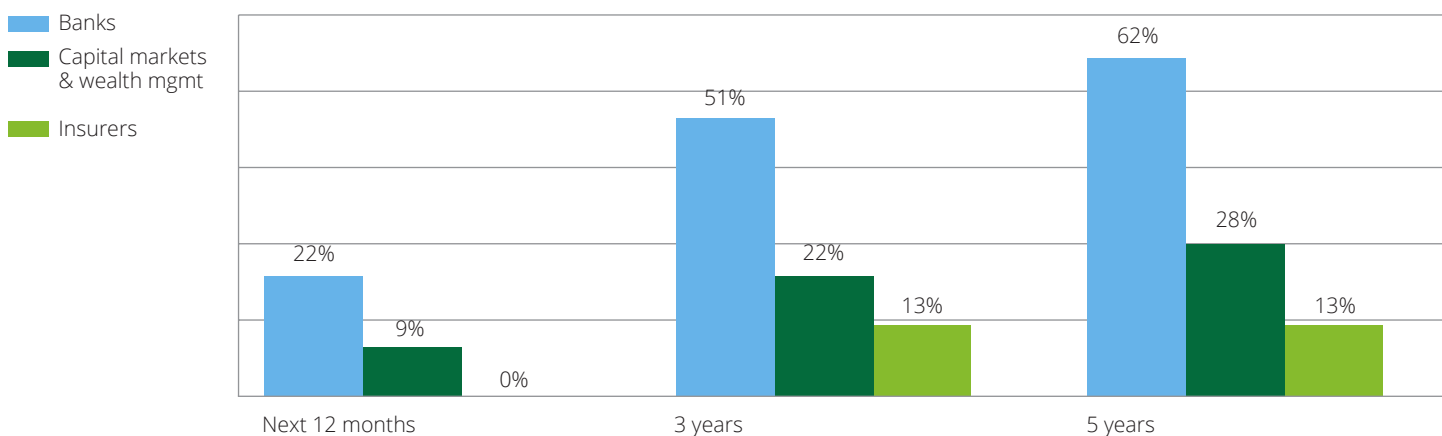
Further, an additional 23 percent of respondents familiar with blockchain say their institutions have launched or are developing pilot programs using blockchain applications.

Responding executives at institutions that have launched blockchain initiatives say they have simplified processes to secure information and have sped up data processing and flows of information among employees. Overall, participants across the survey cite security enhancements and operating cost reductions most frequently as objectives when considering the technology. In addition to generating efficiencies, one way blockchain can reduce costs is by eliminating fees to intermediaries in bilateral transactions.

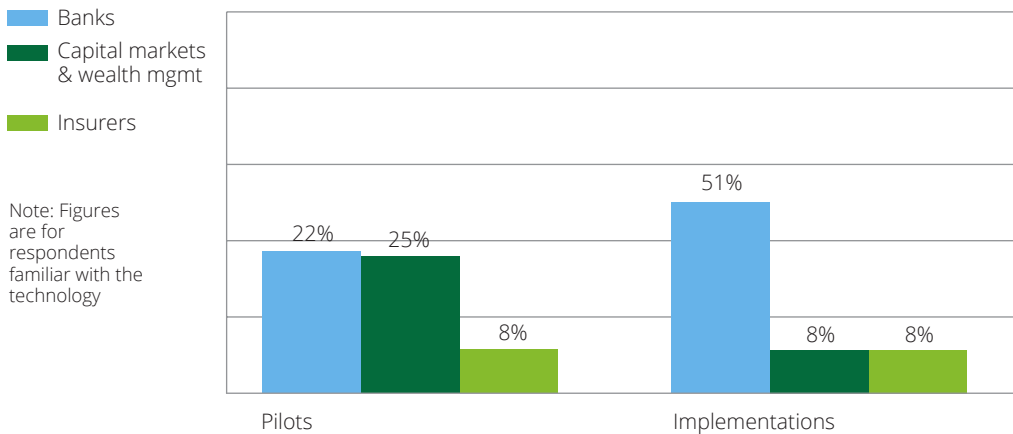
Yet blockchain is still in its early stages, and a lot depends on market acceptance. As noted above, just 13 percent of respondents say implementing the technology is extremely important or critical in the immediate term. Further, blockchain's potential and its most promising applications remain the subject of speculation and debate, and there are significant gaps in understanding across the financial services industry. Just 35 percent of respondents say they are “very” or “extremely” knowledgeable about blockchain, compared with 38 percent who say they are “not at all” or “slightly” knowledgeable.

As with other emerging technologies, a significant challenge for financial services firms when weighing the use of blockchain is determining how blockchain can be integrated most effectively. Specifically, firms must ensure scalable and sustainable solutions as well as regulatory requirements while planning for changes in their operating business environment.

Figure 3: Respondents who think it will be extremely important or critical to implement blockchain technology at their institution



Source: Deloitte, SourceMedia Research/American Banker

Figure 4: Pilot programs and commercial implementations using blockchain technology

Source: Deloitte, SourceMedia Research/American Banker

For blockchain applications designed to serve as the backbone of a core platform, the matter is particularly delicate. A technology executive at a major bank recently told *American Banker*, “If you think about it from the perspective of a global bank with a large number of clients, being a highly regulated entity, working in systemically important financial markets and having a reputation to uphold, we have to be extremely responsible and careful about the technology we build, making sure that it’s enterprise grade, safe, secure, cybersecurity tested and resilient.”

Indeed, while considering the broad strategic questions about the role of a new technology in the future of an institution, there are a wide array of risks to consider when evaluating blockchain.⁴ In addition to the four overall risk considerations highlighted in the introduction (operational, strategic, security, and regulatory), there are two additional notable risks specific to blockchain:

Value transfer risk: The peer-to-peer framework exposes participants to risks that would otherwise be managed by a central intermediary.

Smart contract risk: Smart contracts can potentially encode complex business, financial, and legal arrangements on the blockchain, but aligning them with the many permutations, exceptions, and constraints that prevail in the real world is challenging. Also, outside “oracles” that feed data into the network to trigger smart contracts may be vulnerable.

Moreover, the Treasury recently released the final “Core Principles”¹ report that deals with regulating non-bank financial institutions and innovation, which provides roadmaps and recommendations for Congress and federal regulatory agencies in prioritizing actions and reform efforts. The Treasury report briefly covers cryptocurrencies and blockchain technologies, while noting that the Financial Stability Board (FSB) is currently leading an interagency effort to monitor these areas. In addition, the Report mentions that the G20 Communique has addressed blockchain and acknowledges the potential of the distributed ledger technology to improve efficiency and inclusiveness of the financial system. However, because blockchain-connected assets possess inherent risks in investor protection, market integrity, tax evasion, money laundering, and terrorist financing, the Communique called on the Financial Action Task Force (FATF) to implement standards as they apply to blockchain and cryptocurrencies and to advance them for global implementation. Throughout the second half of 2018, it is expected that regulatory agencies will continue to build more focus and response to the acceleration in technological innovation for financial services and the proliferation of digital tokens.

Many financial institutions are actively experimenting with blockchain and building platforms around its concepts.⁶ However, with regulatory uncertainty that could pose risk towards the use of technology for financial services, firms need to formulate careful roadmaps to navigate the technology’s risk as they make costly and disruptive investments.

When considering adoption, one respondent advises, “Make sure it is the right business decision and that you aren’t just chasing the next shiny technology.”

¹US Department of the Treasury, “A Financial System That Creates Economic Opportunities: Nonbank Financials, Fintech, and Innovation” July 2018. Report to President Donald J. Trump Executive Order 13772 on Core Principles for Regulating the United States Financial System

End notes

- 1 Responses ranged from 0, for “not at all important,” to 7, for “critical.”
- 2 Five responses were possible, on a scale from “not at all knowledgeable” to “extremely knowledgeable.”
- 3 David Schatsky and Amanpreet Arora, Robots uncaged: How a new generation of sophisticated robots is changing business, Deloitte Insights, Deloitte Development LLC, October 18, 2017
- 4 Prakash Santhana and Abhishek Biswas, Blockchain risk management: Risk functions need to play an active role in shaping blockchain strategy, Deloitte Development LLC. May 2017
- 5 Distributed Ledger Technology: Implications of Blockchain for the Securities Industry, The Financial Industry Regulatory Authority, January 2017
- 6 Jesus Leal Trujillo, Stephen Fromhart, and Val Srinivas, Evolution of blockchain technology: Insights from the GitHub platform, Deloitte Insights, Deloitte Development LLC, November 6, 2017

Contacts

Peter Reynolds

Deloitte & Touche LLP

Deloitte Risk & Financial Advisory | Managing Director

pereynolds@deloitte.com

Gina Primeaux

Deloitte & Touche LLP

Deloitte Risk & Financial Advisory | Principal

gprimeaux@deloitte.com

Chris Spoth

Deloitte Center for Regulatory Strategies | Managing Director

Deloitte & Touche LLP

cspoth@deloitte.com

Justin Panicker

Deloitte Risk & Financial Advisory | Manager

Deloitte & Touche LLP

jpanicker@deloitte.com

Christian McNally

Deloitte Risk & Financial Advisory | Senior Consultant

Deloitte & Touche LLP

chmcnally@deloitte.com

Param Gupta

Deloitte Risk & Financial Advisory | Senior Consultant

Deloitte & Touche LLP

paragupta@deloitte.com

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